

Claims

1. Installation for the heat-treatment of parts which comprises a rotary hearth furnace (1) which can be rotated in a timed manner and which
5 has an outer and an inner wall (2, 3) limiting a furnace chamber which is divided up into a heating zone (6) and at least one treatment zone (7 to 9) by means of vertically movable doors (5a-5d), the outer wall (2) in the heating zone (6) being provided with a closable opening (11) for charging or discharging said furnace, a transport device for transporting
10 the parts into or out of the rotary hearth furnace and a quenching device (18),
characterised in that
a second closable opening (16) for charging or discharging is provided in the outer wall (2) of the rotary hearth furnace (1) in the last treatment
15 zone, that a sluice (17) is disposed adjacent to the second opening (16) for charging or discharging, and that the quenching device (18) is designed as a quenching bath which is connected to the rotary hearth furnace (1) by means of the sluice (17).
2. Installation according to claim 1, characterised in that
20 the two openings (11, 16) for charging or discharging are disposed next to each other at a circumferential distance of substantially 45°.
3. Installation according to claim 1 or 2,
characterised in that a charging sluice (12) is disposed upstream of the first opening (11) for charging.
- 25 4. Installation according to claim 1,
characterised in that the first opening (11) for charging is disposed vertically over the furnace chamber and that a charging sluice (12), which is designed as an elevator sluice, is disposed upstream of the first opening in the vertical direction.

5. Installation according to any one of claims 1 through 4,
characterised in that the sluice (17) and, if provided, the charging sluice
(12) are of gas-tight design.
- 5 6. Installation according to any one of claims 1 through 5,
characterised in that the sluice and, if provided, the charging sluice (12)
have at least one sluice door which is substantially at right angles to the
opening (11, 16) in the outer wall.
- 10 7. Installation according to any one of claims 1 through 6,
that a second quenching device (19) is connected to the rotary hearth
furnace (1) by means of the sluice (17).
8. Installation according to claim 7,
that the second quenching device (19) is designed as a quenching bath
or as a gas quenching chamber.
- 15 9. Installation according to claim 7 or 8,
characterised in that the temperature in the second quenching device
(19) is different to the temperature in the quenching bath (18).
- 20 10. Installation according to any one of claims 1 through 9,
characterised in that a transport device (15, 20) in the form of a pusher
device is assigned to at least one opening (11, 16) for charging or dis-
charging the furnace.
11. Installation according to any one of claims 1 through 10,
characterised in that at least one additional vertically movable door (5a
–5e) is provided to change the length of the heating and/or treatment
zone, all doors being individually controllable.
- 25 12. Installation according to any one of claims 1 through 11,
characterised in that one of the vertically movable doors (5a –5e) is lo-
cated between the first opening (11) and the second opening (16).

13. Rotary hearth furnace for the heat-treatment of parts (22) which comprises a rotary hearth (23) which can be rotated in timed manner, an outer and an inner wall (24, 25) limiting a furnace chamber which is divided up into a heating zone (27) and at least one treatment zone (28 to 30) by means of vertically movable doors (26a-26e), and a closable opening (31) for charging and discharging which is disposed in the outer wall (24) adjacent to the heating zone (27),
5 characterised in that
a second closable opening (36) for charging and discharging is disposed in the outer wall (24) adjacent to the heating zone (27) and at a distance to the first opening (31) and that the rotary hearth can be rotated in both directions.
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14. Rotary hearth furnace according to claim 13;
characterised in that the heating zone (27) extends over an area of substantially 90° between the first and the second opening (31, 36) for charging and discharging.
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15. Rotary hearth furnace according to claim 13 or 14,
characterised in that at least two treatment zones (28 to 30) are provided which each adjoin the heating zone (27) and for each of which a different treatment temperature and a different treatment atmosphere can be set.
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16. Rotary hearth furnace according to any one of claims 13 through 15,
characterised in that doors (26a-26e) are provided on both sides immediately next to the opening (31) for charging and discharging so that a charging and discharging zone (32) is formed.
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17. Installation which comprises a rotary hearth furnace according to any one of claims 13 to 16, a transport device for transporting the parts into or out of the rotary hearth furnace and a quenching device (35),
characterised in that,
30 a sluice (37) is disposed upstream of the second opening (36) for charging

ing and discharging, that a second quenching device (38) is provided which is designed as a quenching bath and which is connected to the second opening (36) for charging and discharging the rotary hearth furnace by means of the sluice (37).